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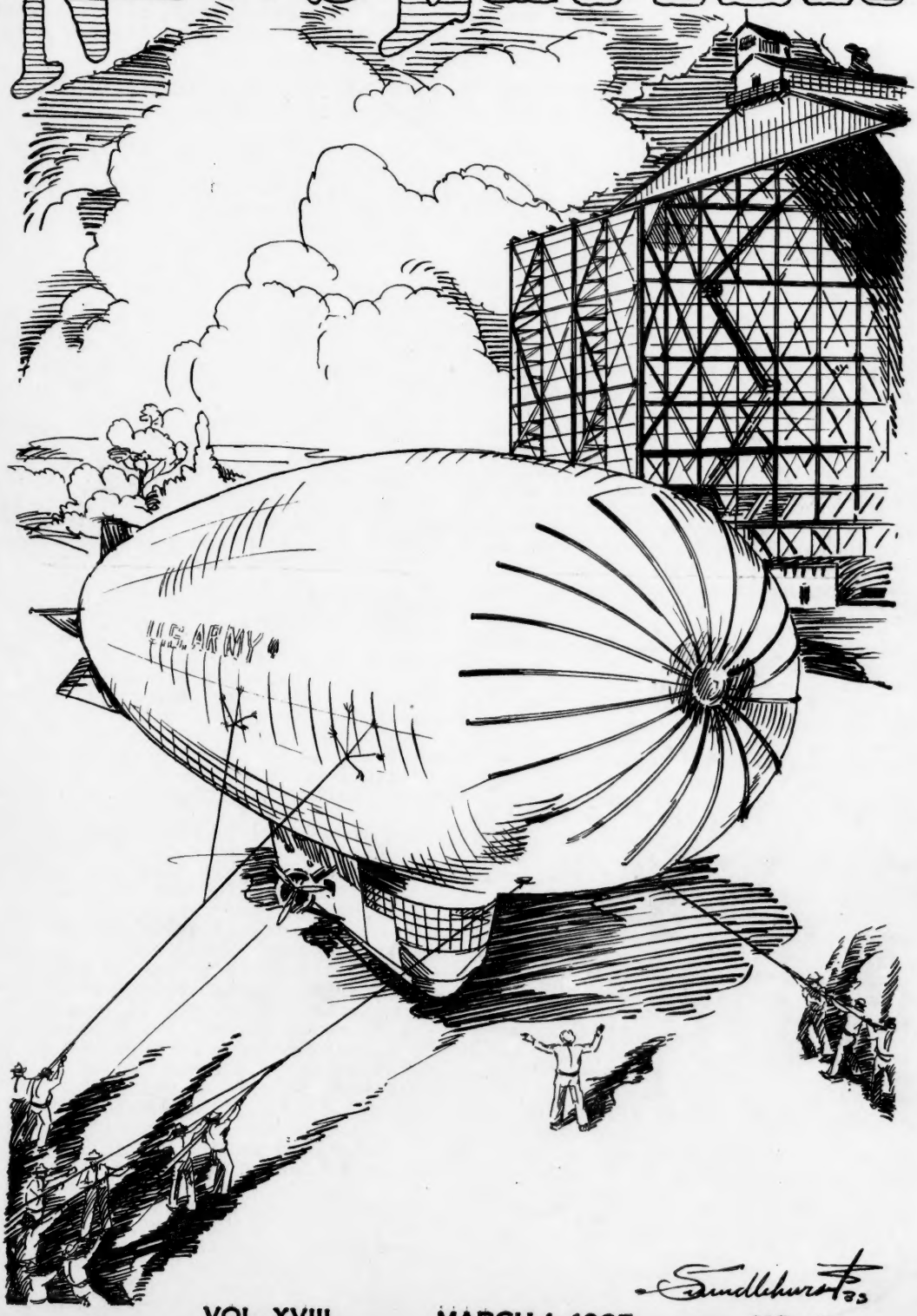

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VOL. XVIII AIR CORPS NEWS LETTER NO. 4

Information Division, Air Corps — March 1, 1935 — Munitions Building, Washington, D.C.

The chief purpose of this publication is to distribute information on aeronautics to the flying personnel in the Regular Army, Reserve Corps, National Guard, and others connected with aviation.

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REORGANIZATION OF THE AIR CORPS IN THE UNITED STATES INCIDENT TO THE ORGANIZATION OF THE G.H.Q. AIR FORCE

Instructions have just been issued by the War Department, effective March 1st, governing the reorganization of the Air Corps within the continental limits of the United States in connection with the organization of the General Headquarters Air Force.

Under the heading of control and jurisdiction, the instructions provide that the Office of the Chief of the Air Corps, the Materiel Division (including Air Corps Depots) and the stations, installations and units (assigned or attached) of Air Corps Special Service Schools remain under the jurisdiction of the Chief of the Air Corps.

All Air Corps stations, station complements, photo sections, Corps and Army observation units and Corps Area detachments, except those noted in the preceding paragraph, remain under the jurisdiction of Corps Area Commanders concerned.

All units of the G.H.Q. Air Force are assigned to the control of the G.H.Q. Air Force Commander.

The War Department has issued a station list, showing the location of the various activities under the jurisdiction of the Chief of the Air Corps and the stations of the various units under the control of the G.H.Q. Air Force Commander. This list will be distributed to all Air Corps activities in due course of time.

In the assignment of Regular Army Air Corps officers to station complements, Barksdale and Langley Fields will receive 11 each, and Bolling, Brooks, Hamilton, March, Mitchel, Rockwell, Scott and Selfridge Fields, 8 each. Officers of other branches who are assigned to duty at any of these Air Corps stations as Quartermaster, Surgeon, etc., will be part of the station complement at that station. The Air Corps officers in the station complement will be entitled to the temporary grades indicated in Circular No. 7, War Department, dated January 25, 1935. The remaining officers at a station will be available for assignment to combat units, service squadrons and photo sections organized thereat.

At the earliest practicable date after March 1st, a total of 15 enlisted men, including 2 Technical Sergeants, 1 Staff Sergeant, 4 Sergeants, 4 Privates, 1st Class, and 4 Privates, among whom one holds a 1st Class Specialist rating; one, 3rd Class, and six, 6th Class, will be transported by air from Randolph Field to Maxwell Field. Upon arrival at the latter station, these men will be assigned to the Air Corps Tactical School Detachment, or units attached to the Air Corps Tactical School, as directed by its Commandant.

A total of 75 enlisted men, including 12 Sergeants, 12 Corporals, 40 Privates, 1st Class, and 11 Privates, among whom 26 hold Specialist Ratings, viz: eight, 2nd Class; six, 3rd Class; 3 each, 4th and 5th Classes, and six, 6th Class, will be transported by air from Barksdale Field to Maxwell Field, to be assigned to duty as indicated in the preceding paragraph with respect to the enlisted men arriving from Randolph Field.

The Headquarters G.H.Q. Air Force and Headquarters Squadron, G.H.Q. Air Force, consisting of 2 Master Sergeants, 1 First Sergeant, 4 Technical Sergeants, 8 Staff Sergeants, 7 Sergeants, 7 Corporals, 18 each Privates, 1st Class, and Privates, total 65, included among whom will be 7 air mechanics, will be consolidated into Headquarters and Headquarters Squadron, G.H.Q. Air Force, and will proceed by rail on or about March 1, 1935, from Bolling Field to Langley Field. Included among these 65 men are 23 holding Specialists' ratings, as follows: one, 1st Class; three, 2nd Class; five, 3rd Class; one, 4th Class; two, 5th Class, and eleven, 6th Class.

Service Squadrons are charged with establishing and operating messes for combat units when these units are operating at their own stations, and, when possible, in the field. Mess personnel assigned to combat squadrons will be detached to service squadrons for this purpose. During maneuvers away from their home stations and when unaccompanied by service squadron personnel, or when established messes are not available, combat units will establish and operate their own messes.

Service Squadrons and station complements will each establish and operate their own messes. At stations where consolidated messes are in operation on account of restrictions due to lack of suitable construction, the station complement, assisted by the necessary de-

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detachments from the combat and service squadrons, will operate the mess. These provisions will apply only when the combat and/or service squadrons are at their home stations.

The detachment of enlisted men or officers from Air Force units to special duty of any kind, connected with the internal administration of a post, will be made only with the approval of the tactical commanders concerned.

Air Corps personnel, who are assigned to the station complement and who are on flying status, will be attached for flying training by the station commander to the tactical unit recommended by the tactical commander.

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GENERAL WESTOVER RETURNS FROM INSPECTION FLIGHT IN THE NORTHWEST

Brig.-General Oscar Westover, Assistant Chief of the Air Corps, on January 11th left Washington on an extended cross-country flight, arriving at Pearson Field, Vancouver Barracks, Wash. January 14th.

While in the Northwest, General Westover inspected from the air, and in many cases on the ground, 81 airports and proposed sites for airports or air bases. Marked progress in building and improving airports was found to have been made since his last visit to the Northwest at the time he conducted air force command post exercises there in June, 1933.

General Westover conferred with the governors of Washington and Oregon, as well as their advisors, on airport development. At the request of Governor Martin, of Washington, General Westover furnished to Mr. Lacey V. Murrow, State Director of Highways, his comments upon a proposed State bill directed to the improved administration of State airports. General Westover found that in both States a considerable number of new airports and landing fields are under construction or projected, and that in each State the Emergency Relief Administrations, the State Board of Aeronautics, and the various Chambers of Commerce are cooperating to advance the program.

Another major purpose of General Westover's visit to the Northwest was the transaction of business of his office as Director of Aircraft Production, in connection with the affairs of the Spruce Production Corporation.

The return trip to Bolling Field included stops at Hamilton, Crissy, Rockwell, Clover and March Fields. From March Field the Southern Airways was followed, via Tucson and El Paso to Barksdale Field, Maxwell Field, and Candler Field, Atlanta, Ga.

Upon returning to Washington, General Westover made a full report of his trip to the War Department.

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OFFICER REWARDED FOR HEROISM

Capt. Sargent P. Huff, Ord. Dept., stationed at Rockwell Field, Calif., was recently awarded the Soldier's Medal for heroism displayed by him August 28, 1934. In the afternoon of that day he was lying on the beach at Rockwell Field watching his own children playing in the surf with other children of the post. A sudden scream of "Help" from 11-year old Bobby Archer brought him suddenly to his feet. Observing that the boy was caught in a rip tide and being carried out to sea, Capt. Huff, with utter disregard of his own safety, swam into the rip tide and, with great difficulty, succeeded in bringing the boy safely to shore, saving his life.

"Captain Huff well deserves the honor that has been bestowed upon him," says the Rockwell Field Correspondent. "His courage and ability will long be gratefully remembered by Lieut. and Mrs. C. E. Archer, parents of the youngster he saved."

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FOREIGN AIRPLANE DEVELOPMENT

Mr. John J. Ide, Technical Assistant in Paris, France, of the National Advisory Committee for Aeronautics, recently addressed Materiel Division personnel at Wright Field, O., on the subject of Foreign Airplane Development. Mr. Ide stressed the influence on foreign transport aviation during 1934 of the high speeds attained by American transport airplanes, pointing out that, since it was considered abroad that aerodynamically the design of the airplane has been improved as far as possible, concentration had been bent upon raising the efficiency of power plants. From his description of airplanes shown at the Paris Exhibition this concentration had evidently borne fruit, for scarcely a speed of less than 200 m.p.h. was mentioned in connection with them. Some of these were computed speeds, however.

Of interest was the fact that in many of the advanced engines power plant development had been greatly advanced after the engine was placed in service, the conclusion reached being that if the services were willing to worry along with their "teething troubles," quicker progress was made in the development in an airplane than on the test stand.

Except in Germany, Mr. Ide said, no

great progress had been made with the heavy oil engines. Replacement of biplanes by monoplanes, principally the low wing monoplane, and the general adoption of metal construction are reflections of tendencies that we have noted in our own development. Mr. Ide illustrated his talk with slides.

Captain D.M. Reeves, Chief of the Technical Data Section of the Materiel Division, introduced the lecturer.

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20TH PURSUIT GROUP GOES "ON THE AIR."

The 20th Pursuit Group, stationed at Barksdale Field, La., performed their part in officially opening National Defense Week in Shreveport. Through arrangements made with a local broadcasting station, KRMD, the Group was "on the air" for 15 minutes at high noon on Tuesday, February 12th.

Maneuvering close to Shreveport, the commands of Major Harmon, Group Commander, were picked up and rebroadcasted to the listening public in and around Shreveport. A low bank of clouds partly obscured at times the group of 33 airplanes, but the noise made by dives was plainly audible to all listeners. A special weather broadcast by the Group Communications Officer while the Group was "above the clouds" proved very interesting to the public. This being the first rebroadcast of its kind near Shreveport, it proved a huge success.

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BOMBARDMENT WING RETURNS FROM FIELD MANEUVERS

By the Langley Field Correspondent

The 2nd Bombardment Wing, Langley Field, Va., Major B.Q. Jones, Commanding, returned to its home station on February 4th, after 27 days of field maneuvers in the 4th Corps Area. Participating in these maneuvers were 93 Air Corps officers (pilots), 2 Flight Surgeons, 19 Flying Cadets and 241 enlisted men. The 81 airplanes utilized included 44 Pursuit, 29 Bombardment and 8 Transports. The ground echelon used 42 trucks of the ½ and 1½-ton class and an ambulance.

Due to the shortage of airplanes, the Wing was organized for the maneuvers as two groups of two squadrons each, in accordance with the Tables of Organization proposed by the Andrews' Board, but it was increased in the matter of personnel due to the requirements for truck drivers and to the further fact that the Wing completely took care of itself without the aid of Service Squadrons. Concentrations and unit movements to concentration were made on this organizational status. Tactical and combat maneuvers were flown as two air forces. Each air force consisted of one Pursuit Squadron and one Bombardment Squadron. In combat exercises, decentralization of units was practiced wherever practicable and contact was maintained by radio between the Wing Commander and his units.

The flight (2 elements of 3 planes each) operated as the basic tactical unit; the squadron as the basic administrative and tactical unit; the group as the basic supply, administrative and tactical unit; the Wing as the major tactical command. The Group Commanders and staffs directed the tactical employment and administered to the needs of their composite groups (half Pursuit and half Bombardment) in their respective combat sectors. The Wing Commander and Staff functioned as the superior headquarters in the theatre of operations.

A total of 16 independent Air Corps camps were made; 3753 hours were flown, 3315 convoy road miles and 2675 air line miles were covered in Wing movements.

A ground radio net between the Wing and Group headquarters and between the Wing and the Air Corps net through Maxwell Field was satisfactorily maintained by using SCR-187 sets installed in airplanes with improvised power furnished while on the ground by portable gasoline-driven units.

The purpose of the maneuvers was manifold,- to test whether an Air Corps combat unit could operate in the field, constantly changing its theatre of operations; take care of itself; supply itself by air transportation (including rations and Air Corps supplies) and evacuate its sick. In fact, all the related functions of field operations were tested. The present field equipment of the Wing was tested under war conditions. The Wing was tested as a combat unit under varying conditions of terrain and weather.

On January 9th, the 2nd Bombardment Wing began its movement by groups from Langley Field, Va., to the concentration point on the Pan-American Airport at Miami, Fla. Delayed by fog, the Wing completed its concentration on January 11th.

At Miami, the Wing was divided into two opposing air forces and plans were made for war to begin in the first theatre of operations. The front line was designated as an east-west line through Tampa, and the two opposing air force commanders were permitted to use,

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and operate from, any airport more than 20 miles from the front line in their respective areas. The Red Air Force, commanded by Captain A.M. Guidera, was south of the front line. Captain Guidera placed his Pursuit Squadron, commanded by Captain H.H. George, and his Air Force Headquarters at Sarasota, Fla., and his Bombardment Squadron, commanded by Captain E.C. Black, at Bradenton, Fla.

The White Air Force, commanded by Major Willis H. Hale, defended the area north of the front line. Major Hale placed his Bombardment Squadron, commanded by Captain R.T. Cronau, and his Air Force Headquarters at Lakeland, Fla., and his Pursuit Squadron, commanded by Captain Rex Stoner, at Auburndale, Fla. All of these airports, with the exception of Lakeland, were typical war time airdromes. The location of the airdromes used by each air force was kept secret.

At 3:00 p.m., January 15th, war was declared, and the two opposing forces went into action. All combat airplanes were equipped with gun cameras. Batteries of ground gun cameras were used as anti-aircraft defenses of the airdromes, and alert Pursuit patrols took off upon the approach of enemy airplanes. Bombing raids and Pursuit fights were occurring continuously day and night throughout three days of battle. It was interesting to note that the newspapers of Sarasota and Bradenton were intensely pro Red and those of Lake City and Auburndale intensely pro White. On January 17th, peace was declared. The Wing then moved to Tampa, where the 20-hour check was made and the troops given a day of rest from the strenuous duties of the past week.

On January 20th, the Wing again became two opposing air forces and the front line extended from Madison, Fla., to Drifton, Fla. The Red Force commander placed his air force at Lake City, Fla., and the White Air Force commander concentrated at Valdosta, Ga. Each air force kept Pursuit patrols on the lines from daylight until dusk each day. In raids across enemy airdromes and strategic centers, all planes were required to cross the designated front lines. After three days of warfare in this locality, the Wing concentrated at Mobile, Ala., for a 40-hour check.

Before leaving the Valdosta-Lake City area, the cold wave which struck the United States at that time caused both warring factions intense shivers, and the Sibley stoves were needed for the first time on these maneuvers. The ingenuity of Corporal E.J. Zetwo came to the fore when he was cold and saw several drums of drained engine oil. He took an oil can and attached to it a metal hose and draincock. This was suspended above the Sibley stove and the oil permitted to flow through a hole in the Sibley stove on to a piece of wood or brick or wire mesh. The drain-cock regulated the flow of oil to give the heat desired. This method was found to be highly successful and soon all stoves were similarly equipped. Other difficulties due to the change in temperature, such as cold weather starting of engines were encountered and means of overcoming them are now the subjects of reports made in connection with the maneuvers.

Upon arrival at Mobile, Ala., it was found that in the freezing weather an efficient performance of the 40-hour inspection could not be made in the open. The type of operations (continued days of intense aerial combat operating out of rough war-time airdromes) necessitated the utmost in the 40-hour check.

Shushan Airport, New Orleans, offered the use of heated hangars, and the Wing moved to New Orleans, where the 40-hour check was accomplished.

On February 1st, war was again declared between the Red and White air forces, with the front lines extending roughly north and south midway between Maxwell Field, Montgomery, Ala., and Fort Benning, Ga. The Red Air Force used the Montgomery Municipal Airport and Maxwell Field, while the White Air Force used Columbus Municipal Airport and Lawson Field. At 5:30 p.m., February 2nd, the Wing Commander declared peace and directed the groups to return to Langley Field.

Sufficient air transport was not available to carry field equipment for all units. One Pursuit Squadron, the 33rd, was partly equipped and moved largely by air. The Bombardment Group carried all essential field equipment by air in their planes. One Pursuit Squadron not equipped with aerial transportation had to rely entirely on its truck convoy. Duplication of equipment and of trucks was necessary in order that, in long jumps, the squadron would have sufficient tentage and equipment for housing while the second set of equipment was being brought to their place of encampment. The day preceding movement of the squadron, the advance echelon of trucks with one complete set of equipment moved to the new location and set up camp. The rear echelon struck camp and moved forward after the squadron departed. This system worked satisfactorily except for the consideration of doubling the amount of equipment needed and the number of men necessary to transport it. This method of leap frogging is thought to be the best way of keeping an Air Corps unit, which is constantly moving, properly supplied with the necessary impedimenta where air transport is not available.

The supply of rations was made by air

from the advanced base at Maxwell Field. All food could have been so drawn and flown to the squadrons in the field. To insure the best possible field messes, however, fresh beef, fresh vegetables and milk were purchased locally.

Only those supplies which had a normal expectancy of being used in a 48-hour period were carried. Requisitions were made for items needed, and upon consolidation were filled at Maxwell Field and returned by the Wing transport planes. Strict accounting of all parts in the crew chiefs' kits and all requisitions were kept for use in preparing tables of necessary supplies for field maneuvers.

The duties of the men and the number of men required were likewise cataloged and a strict accounting was kept of man hours on the various duties involved. These data are now the basis of tentative Tables of Organization for a Wing at minimum strength in the field for the maximum number of airplanes involved.

All the cities at which the Wing or units thereof concentrated were extremely hospitable to the "Visiting Firemen." Courtesy cards to Country Clubs, Yacht Clubs, Athletic Clubs, etc., invitations to parties, dances and receptions were showered upon the Wing personnel.

The personnel of the 2nd Wing are to be congratulated on their performance. They flew a month of intensive combat maneuvers over various types of terrain under various weather conditions out of airports that compared with those of war. With 3753 flying hours of this type of training, not a single serious accident occurred, and no fatalities or injuries of even a minor nature were involved. There was only one forced landing and that, fortunately, over an airdrome.

Major Jones and his staff are now engaged in comparing the gun camera films and combat reports of each contact of the opposing air forces. The winning air force and the individual field exercise aces will be announced shortly.

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WASHINGTON NATIONAL GUARD AIR CORPS IS UP AND DOING

Felts Field, Spokane, Washington, the station of the 41st Division Aviation of the National Guard of that State, is the most northwestern Air Corps station in the United States.

In his first contribution to the News Letter, the Correspondent starts off by saying that it is a "Million Mile Cross-Country" flying organization, with the finest military hangar in the country. He backs up this statement with statistics which show that between July, 1934, and January 15, 1935, pilots of the 41st Division Aviation piled up more than 1,000,000 miles in cross-country and Weather Bureau flights, in addition to regular Sunday training schedules.

Touching on the hangar, he says:

"Taking an early advantage of the President Roosevelt public works program, officers and friends of the Division Aviation launched an active campaign that resulted in the construction of a $102,000 brick and tile hangar, with 20,000 square feet of floor space.

Designed to match the present administration building, the new hangar is constructed of rough face artistic brick. Although a difficult problem was presented in the roof design, there are no posts, or other roof supporting members on the floor of the hangar. The roof truss is of a bridge design sufficiently sturdy to carry the 20,000 square feet of roof that is sometimes covered with snow. It is the largest truss of its kind in the Northwest.

The interior finish is of tile, with a specially prepared light red stainless floor. A traveling crain hoists heavy and bulky freight shipments to the store room and parachute balconies, and makes the changing of motors easy. There are a series of floor lights for night mechanical work.

Large electric doors, 25 x 180 feet, travel on tracks on the field side of the hangar, making it possible to move a particular airplane to the field without moving other ships. In front of these doors is a concrete apron 100 x 200 feet, with a concrete taxi-way to the field. A separate gas and oil house is at the east end of the hangar, which is heated with oil.

Numerous Regular Army Air Corps officials, visiting Felts Field, have declared the hangar to be the finest they have ever inspected."

Reverting to the subject of flying, the News Letter Correspondent says that, flying across the newly established Northern Transcontinental Airway, and returning via the central route, three Douglas O-38E's flew 243 hours and 15 minutes on the trip. Commanding the flight was Major Robin A. Day, Regular Army Instructor; Captains Claude Owen, Robert Owen, Lieuts. Hillford R. Wallace, Ellsworth C. French and Sergeant Bill Finch.

On the flight to Florida were five ships, totalling 377 hours and 55 minutes flying time. More than 8,000 miles were covered on this trip. Returning north from the "Sunny South," the flight encountered sub-zero weather that made it difficult to start the motors at Reading, Calif., where the ships stood out all night.

On this flight were Major Day, Captains Claude Owen and L. Walters, Lieuts. Enier Malstrom, Dale S. Swartz and Carl Schirmer, and Sergeants Benscotter, Hansen and Erickson.

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With respect to the recommendation that there should be closer coordination of Army and Navy experimental and development work, and that the National Advisory Committee for Aeronautics should be more largely used as an agency for such coordination, the Federal Aviation Commission states that if the experimental procurement programs of the air arms of the Army and Navy are to be expanded, the interest of economy obviously requires the closest coordination of plan and practice between the two services.

It seems important that the agencies of coordination now in existence should be strengthened, and that the definite allocation of a particular undertaking to one Service or the other, to be carried on in the interest of both, should be a common rule.

Suggestion is made that increased use be made of the facilities of the National Advisory Committee for Aeronautics, if necessary through the formation of sub-committees of technically expert representatives of the various government departments interested and with all non-governmental members excluded. Where work such as the development of high-powered engines or the study of new types of aircraft structure is to be carried on, the laboratories of the National Advisory Committee always and necessarily play a large part in the preparatory research. The general program of aeronautical development to be carried on by the Army and Navy ought to be planned as a whole and its parts allocated with the participation of selected National Advisory Committee personnel and perhaps of other interested governmental agencies.

While the Services are perfecting improved means of coordinating the developmental work, it would seem well for them to perfect also closer agreements upon many matters of technical detail where present differences of practice appear unnecessary and irritating. The attention of the Commission was called to many instances of differences of practice between the Army and Navy in the checking of aircraft designs, in the specifications for standard materials, and other kindred matters. In the particular case of analyzing an aircraft structure for strength the Army, Navy, and Department of Commerce now require not only different factors of safety but totally different methods of calculation. The manufacturer who wishes to build aircraft for both Services and for the commercial market must either maintain three separate engineering staffs or train one staff in the application of three alternative methods. The Army and Navy have held joint conferences on some of these matters for a number of years and much progress has been made, especially in standardizing specifications for materials. While it is not desired to belittle what has already been done, the hope is expressed that much more can be accomplished in the future. The arrival at an inter-Service agreement on every possible point should be regarded as a major responsibility of all the personnel concerned.

In recommending the temporary attachment of a few officers of the Army and of the Navy to civil activities, and especially to air transport, the Commission states that the experience of the past winter furnished a forceful evidence of the generally incomplete comprehension by military personnel of the nature and quality of present air transport operations. Though there is a fundamental difference between transport and military flying, and hence they should be kept quite separate in administration, the experience of the transport lines in maintaining regular operation against all manner of difficulties contains a great many lessons useful for the military and naval Services.

It has been suggested that the Army and Navy should take advantage of transport experience by periodic assignment to actual places in transport organizations. It has been specifically proposed that Army and Navy pilots serve as co-pilots on air lines. That appears so undesirable from both civil and military points of view as to be virtually unworkable. If transport flying is to command public confidence it must have an integrated personnel under a unified discipline. The pilot must know the co-pilot and learn to trust him. The co-pilot has a variety of duties about the plane which have nothing to do with the actual operation of the controls, and for which he requires special training quite apart from that given him as a prospective first pilot. It is found inconceivable that officers of the Army and Navy could be fitted into these places without general loss of efficiency and wreckage of the morale of all hands.

It seems preferable and distinctly desirable that selected officers with special equipment for the work should be assigned to make study of special phases of transport operation. Such studies should be extended to cover other civil activities of possible military interest, such as those of the major flying schools. It ought to be of marked advantage to detail half a dozen experienced engineering officers from each Service to devote a few months to an intensive study of air line maintenance bases and their methods. A limited number of officers might properly fly

as guest pilots on transport lines, but officially taking their places in the plane as passengers, and changing places with the co-pilot at intervals during flight. It would naturally become the obligation of the officers who had been assigned to any such study to give the Service the benefit of their experience by memoranda discussing particular phases of civil flying from the Service point of view and stressing whatever they might have discovered that was new and possibly useful to the Service, and by lectures at Service schools. There are so many specialties in which Army and Navy air officers might be well trained and so many subjects of which special study by selected groups would be profitable, that there ought to be particular interest in anything that can be done to improve the machinery whereby special knowledge gained by a handful of officers can be disseminated throughout the entire Service as a leaven.

In making the recommendation that the War and Navy Departments should make reasonable use of facilities of civil aircraft repair stations for repair and service work on military and naval aircraft, the Commission believes that military aviation would gain from a closer association with civil aviation enterprises and a larger use of their facilities. The Commission was informed that it has been the uniform practice of the Army and Navy, except in extraordinary emergency, to depend entirely upon their own facilities for aircraft repair and overhauling work. Each service has certain major depots to which aircraft are flown for overhauling and to which damaged machines are commonly shipped, sometimes over very long distances. The practice of certain European air forces, especially that of Great Britain, of making exclusive use of industrial facilities for overhauling and repair work has not appealed here. It has even been the rule for military aircraft proceeding transcontinentally to keep away from the established commercial airways in order that landings may be made at fields with permanent military installations and that the purchase of any supplies from civilian sources may be avoided.

While this last course certainly produces a certain economy, it seems unfortunate to alienate the Service personnel from an acquaintance with the best equipped airways of the country, of which regular use would unquestionably be made for moving military equipment in the event of war.

While realizing the administrative difficulties, it is felt that it should be possible in many instances to arrange with advantage to have civil service stations, of which there are now 151 approved for quality and periodically checked by the Department of Commerce, do mechanical work on Service planes and engines. The preponderance of testimony from witnesses at once competent and disinterested seems to be that the quality of the work done by the best civil repair stations is quite in the same class with that of the Army and Navy shops.

Recommending that the maximum term of active service with regular forces on the part of Reserve pilots graduated from the Army and Navy training schools should be increased to at least three years and perhaps further, the Commission points out that another problem common to all military air forces is the unusual form of the promotion curve and the tendency to stagnate promotion. It has been the common experience, at least in the English-speaking countries, that airplanes should be commanded by commissioned officers and that enlisted men should with rare exceptions be used only as second pilots and in limited numbers even in that capacity. As a consequence there is an abnormally large need for officers in the lower ranks in aviation. At the same time it is desirable that such ranks as that of major and lieutenant-colonel be reached by men still young enough to fly actively and well. No system of promotion dependent on seniority will accomplish the two results. In an air force with a straight seniority system, even though there be no war-time-accumulated blocks of personnel to reckon with, officers may expect to reach the rank of major or its equivalent after twenty years or more of service, and then to progress through that rank and those immediately above it with giddy rapidity.

An appropriate selection system can of course produce any sort of relationship of rank to age that may be desired, but it will attain the results desirable in the Air Corps only at the expense of a very drastic elimination of a large proportion of officers below forty years of age, men who entered the Service expecting to find a career there. Whether or not selection is employed, it is understood that it has been the practice of certain European air forces to give short service commissions good for only a limited period, their recipients fully understanding that they must expect to return to civil life at the end of their fixed term. The British system, providing for such commissions good for a maximum of six years and for a possible renewal of five years thereafter, is particularly interesting for comparison with our own in that, like ours, it is not built up in peace time on a conscript basis.

Supplementing the problem common to all air forces, the United States Navy

has a special one. All the officers commissioned in the regular Navy in peace time come from Annapolis. Experience has shown that the severity of the requirements of aviation are such that only a little over 25 percent of Annapolis graduates can qualify for aviation duty. Since not all those who might be able to qualify actually apply for flight training, and since some who have applied and qualified subsequently withdraw or are removed from aviation because of unfitness, it seems to be impossible to expect that more than twenty percent of the regular officers in any rank at any given time will be fully qualified naval aviators. This is not enough to meet the demands of the Service, which will call, under the new naval program, for 705 aviator lieutenants out of a total of 2,266 officers commissioned in that grade by 1941 if the existing program is carried through.

The only recourse for the Navy then seems to be the short-service commission or its equivalent, and the same device ought to be very helpful in ameliorating the promotion problem in the Army Air Corps. Both the War and Navy Departments accept something of the sort as necessary, at least as a temporary expedient and perhaps as a permanent measure, and representatives of both have indicated their hope that they may be able to take Reserves into the regular Service for a term of several years of active duty. It is understood that a three-year term after graduation from the Service flying schools is now under consideration, and recommendation is made that everything possible be done to facilitate such an arrangement and that whatever new legal authority may be required be extended.

It has been suggested that an even longer term would be desirable to provide for a longer period of really useful service after the officer has had a chance to become a fully effective unit in a squadron. It appears that a longer term might be recommended if it were not for the fear that if reservists remained on active duty for more than three years there would be built up behind them an almost irresistible pressure to enable them to stay there indefinitely. No doubt there would be a strong desire on the part of many of the men who came into the Service in such fashion to make it a permanent career, and it seems to be a fact that the Royal Air Force has experienced just such pressure, but the Commission cannot accept it that it is impossible to enforce rules made by the Services with the authorization of the Congress and definitely announced in advance. The longer the term of service the smaller the number of men that will have to be turned out each year, the more fully trained they will be, and the better will be their chance of finding employment in civil aviation. "Our own inclination," the Commission asserts, "from what we have been able to learn of this problem, is to look with favor on an authorization for a maximum of as much as four or five years of active duty after graduation from flying school. The typical Reservist would then be returning to civil life, in the number of about 200 per year from each Service, approximately at the age of 28 and with over 1,000 hours of difficult and disciplined flying to his credit.

Though we have no doubt of the possibility of getting plenty of applications for such duty from men excellently qualified to perform it, we feel that to make it more attractive and to do justice to those who embark upon it there should certainly be offered something in the way of a dismissal salary at the end of the period. Though we have no definite recommendation to offer, we have thought in terms of continuing the officer's regular base pay for from six months to a year after his return to civil life to cover the period in which he is re-establishing himself there."

Recommending that the aviation Reserves, both of the Army and Navy, should be materially strengthened and should receive a higher priority than they at present enjoy in the allotment of funds, the Commission states that in war against a major power our air forces would feel an almost instant need for the mobilization of at least twice, and in the Army probably at least three or four times, their regular personnel. The numbers immediately mobilized in full readiness for duty would have to be backed up, in order that military effort could be carried on, by a Reserve of some additional thousands of qualified pilots who could be made ready for full service within a few weeks. As the Commission has studied the present status of the Reserves it has seemed to that body that this problem has been faced on so small a scale as scarcely to constitute more than a working model. The Navy has a total enrolled Reserve of 481 officer pilots, of whom 251 could be considered as ready for immediate duty. The Air Corps lists a total of 3,865 Reserve pilots, of whom 1,450 are classified as Group I and presumably ready for immediate action, but even the Group I pilots have been restricted by shortage of Reserve funds to a maximum of four hours' flying a month and in one year to only two hours a month. Even the present amount of flying time is less than the minimum necessary for real military fitness. The funds for Air Corps Reserve flying operations seem to have been spread so thinly that a large number of men have received a very small amount of flying practice and still less training of a truly military nature. It seems that the first task of the Army

Air Corps in this connection should be to comb over its present lists and select those who are, and are likely for some years to remain, genuinely qualified for active Service flying.

In establishing priorities in a Reserve force, it is taken as self-evident that the most urgent concern must be with the first-line group that stands ready to step directly into tactical organizations on the day of a declaration of war. The Navy has what seems to be an admirable organization of such a reserve in its 31 Fleet Reserve squadrons, numbering 251 officer pilots, and organized to fly as a unit for some 45 hours a year in the fulfillment of a syllabus of military exercises drawn up by the Navy Department, and to put in a substantial amount of additional practice under the direction of the unit commander. These organizations seem to be close to the ideal of military readiness, as do the nine squadrons of the Marine Reserve which are similarly organized, but their numbers are far inferior to any possible war-time need for immediate service. The specific need here seems to be for additional funds for Reserve purposes.

In the Air Corps, as previously indicated, the problem is not so much with increase of numbers as with improving the quality of the training given to a selected group. Every effort ought then to be made to assemble a group of chosen personnel into tactical units and to give them at least 60 to 100 hours of flying per year on military airplanes and doing military exercises. Such units, the cream of the present Group I, should have full priority of claim on any aviation Reserve appropriations. In this connection, though appreciating the distinction that exists between National Guard and Organized Reserve in the general national defense plan, it would seem advantageous to make a larger use of National Guard air units and so to decentralize the Air Corps Reserve to a greater degree than at present.

At present there are 19 National Guard squadrons in as many different states. They have a splendid record of efficiency, but they are limited by War Department decision to the single function of observation. The Commission accordingly suggests that further study be given to the classification of squadrons and to the possible desirability of assigning additional squadrons with more varied functions to such states as care to provide adequate buildings and sites for them, with subsequent transfer of personnel from the present Organized Reserve to the squadrons so created.

Whatever the precise machinery of organization that may be chosen and without attempting to usurp the function of the War and Navy Departments by specifying exact numbers, it seems conservative to say that the aggregate of effective air force Reserves should be at least double what it is now. The training, at least for the Army, should be far more extensive and continuous than it has been at any time in the last ten years. A considerable part of the practice flying time might be taken, at least by the second-line Reserve, in light civil aircraft rented from commercial operators, the Service authorizing the payment of a fixed sum per hour for their use.

Flying under those conditions ought to cost less than one-third as much per hour as was told it now costs to operate Army aircraft for the Reserve. The Baker Board recommended "the purchase of small, inexpensive airplanes of good performance adequate for training pilots in cross country and night flying" for the Regular Army. The use of such economical equipment, preferably by rental rather than by purchase, for the Reserve seems even more desirable.

It is realized that this is a matter of finding funds with which to work, but the issue seems so important, and the need for well-trained Reserves in the event of war so great, and the dependence of the regular Services upon them so immediate, that the recommendation is made that the Reserves be given a distinctly higher priority than they now enjoy. At the same time the possible usefulness of special Assistant Secretaryships for Reserve in both Service departments is suggested, in order that the needs of the Reserve's development may be under constant sponsorship by an official of high rank who may always be heard in the Secretary's councils.

To be continued.

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FLYING BY ARKANSAS NATIONAL GUARD

"We were impressed some weeks ago," writes the News Letter Correspondent of the 154th Observation Squadron, Arkansas National Guard, "by a report of the National Guard Bureau which aggregated and classified the total time flown by the various National Guard Squadrons. What interested us most was the relatively large proportion of the time of a number of squadrons that was put in performing tactical missions of one kind or another. We are very much interested in getting any and all information we can from these squadrons as to the type of flying done, the manner in which the missions are executed, whether any particular type of mission is favored and, if so, what stimulates the favoritism. As for our own squadron, being located on a Department of Commerce Airway, we have the use and benefit of the Airway's radio beam and

considerable time has been spent in blind beam flying. We have a front gun target set up on our airport which we use to practice simulated front gunnery. We do some mapping and photography.

If any of the squadrons have any new ideas or innovations for diverting a large proportion of the flying time toward tactical missions, we would like to know about them, using the Air Corps News Letter as a medium.

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HENSLEY FIELD TAKES ISSUE WITH MAXWELL FIELD

The News Letter Correspondent from Hensley Field, Dallas, Texas, invites attention to the item "Heavy Air Traffic at Maxwell Field," which appeared in the News Letter of Feb. 1st, wherein the Operations Dispatcher reported that a total of 119 airplanes arrived at and departed from Maxwell Field between January 1st and 15th.

"It is believed that Maxwell Field will have to take a back seat when comparing heavy airplane traffic with Hensley Field," asserts the Correspondent from the latter station, and he then goes on to say:

"Records of this station show that a total of 105 visiting airplanes arrived at and departed from Hensley Field between February 1st and 5th, 1935; that a total of 434 visiting airplanes arrived at and departed from this station during the period from January 1st to February 5th, 1935; that during the calendar year 1934 a total of 2,758 visiting airplanes arrived at and departed from this station, with only 16 days during the entire calendar year in which no visiting aircraft arrived at or departed from this station, and with a maximum of 153 visiting airplanes in one day; that during the calendar year 1933, a total of 2,585 visiting airplanes arrived at and departed from this station, with only 15 days during the entire calendar year in which no visiting aircraft arrived at or departed from this station, and with a maximum of 113 visiting airplanes in one day."

Not content with letting the matter rest then and there, the Hensley Field Correspondent goes on further to say:

"It is believed that over a period of any one year the number of aircraft (Army, Navy and Marine Corps only) visiting Hensley Field is greater than that at any other Air Corps station. In any event, a comparison of records in this respect with any other station claiming heavy air traffic in visiting aircraft, would be interesting."

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WASHINGTON NATIONAL GUARD AIRMEN EXHIBIT KEEN INTEREST IN AIR FRONTIER DEFENSE

According to the News Letter Correspondent of the 41st Division Aviation, Washington National Guard, Felts Field, Spokane, Wash., intense interest in the National Air Frontier Defense program as first proposed by Representative Wilcox, of Florida, and amended recently by the War Department's legislative proposal, is being exhibited by the officers of this organization.

For the purpose of keeping themselves fully advised with all proposals to strengthen the nation's air defense, and particularly in the Northwest, the officers are meeting at regular weekly luncheons to discuss and consider all Air Corps proposals before Congress.

Interest in these matters has been materially stimulated locally by the present membership on the Senate Military Affairs Committee of Washington's junior Senator, Mr. Lewis Schwallenbach, Past State Commander of the American Legion. Senator Schwallenbach is known to favor a strong military policy, and has communicated with local National Guard Air Corps officers since entering Congress.

As between the Wilcox and War Department proposals, the local Air Corps officers favor the War Department plan, "because it provided for a GHQ Air Force," which they regard as the first real move toward proper recognition of the Air Corps. However, full credit is given Representative Wilcox for bringing out the first real air defense program that has ever attracted national attention and support.

In all of their considerations, the local Air Corps Guardsmen are taking a firm position that the building of an air defense should be left entirely to the Office of the Chief of the Air Corps and the War Department. It is their contention that the project is far too important to the future of the Nation to be weakened by political pressure.

The News Letter Correspondent adds that at this time the Pacific Northwest is without practically any air defense, there being about 12 Army airplanes in this vicinity. It is pointed out that air defense in the Northwest is needed as a means of assisting in the protection of Alaska; that the Boeing Aircraft factory in Seattle, and the Navy Yards at Bremerton are without protection, to say nothing of the Puget Sound region in general.

It is because of these important situations that the policy of a properly developed air defense has been adopted at the luncheon meetings.

19TH COMPOSITE GROUP MAKES ITS BOW
By the Albrook Field Correspondent

The 19th Composite Wing, which will celebrate its first birthday on March 17th, makes its initial bow to the readers of the News Letter. This Wing constitutes the Army Air Corps contribution to the defense of the Panama Canal Zone, and is commanded by Lieut.-Col. William C. McChord. The Wing headquarters is at Albrook Field, which is also the station of the 16th Pursuit Group, commanded by Major Robert L. Walsh. The other major unit of the Wing is the 6th Composite Group, commanded by Major Louis H. Brereton and stationed at France Field.

The first of January this year marked the beginning of a period of intense activity for the newly organized Wing. These intensive operations, however, were not caused by an unexpected order or condition but resulted from the careful planning by the Wing Commander and staff to take full advantage of the brief dry season. This season lasts approximately from the 1st of January to the 31st of March, and only one of the three months - January - is fully available to the Wing for its training. February is devoted to sector maneuvers in which the 19th Composite Wing or its elements are required to participate, while the third dry month - March - is reserved by the Department Commander for his maneuvers. Training exercises scheduled for the remaining months of the year are subject to frequent weather interruptions. When units of the Wing move a short distance from their home airdromes during the wet season they are likely not to return for many days. The Wing training program, therefore, called for combined operations for practically every week day of the month of January.

An interesting feature of the program was a four-day operation, during which the Bombardment and Observation units, commanded by Major Brereton, occupied an airdrome at the new gunnery range at Rio Hato, with a free hand to simulate bombing raids against vital points in the Canal Zone. This gave the 16th Pursuit Group an opportunity to try out many and varied forms of defense, one of which it would be necessary to adopt if called upon to defend a line approximately 45 miles long with approximately 33 Pursuit airplanes.

These maneuvers afforded valuable experience and gave the participating units an opportunity to improve communications and the technique of their particular branch of aviation. In the critique which followed the exercises, the Wing Commander expressed himself as being highly pleased with the progress made by the two groups and commended not only the flying but also the maintenance personnel.

Aerial reviews had a part in the combined training program for the Wing. One inspection and review was held at Albrook Field for Major General Harold B. Fiske, the Department Commander. Gen. Fisk was accompanied on the inspection and in the reviewing stand by Brigadier General John W. Gulick, the Pacific Sector Commander, and by distinguished officials of the Zone Civil Government and several foreign diplomats.

At the conclusion of the inspection and review, General Fuske expressed himself as highly pleased with the appearance of the aircraft on the ground and also with the ability of the Wing to pass the reviewing stand in a precise and orderly manner, despite the fact that the airplanes participating had such a wide variety of speeds and flying characteristics.

Another inspection and review of the entire Wing was held at France Field for Major General Lytle Brown, Commander of the Atlantic Sector. At the conclusion of the review, General Brown highly complimented Colonel McChord on the Wing's appearance and performance.

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MAXWELL FIELD ENTERTAINS CHINESE AVIATION MISSION

Folding his arms and smiling engagingly, Colonel P.T. Mow, wiry young Chinese Air Corps Attache of the Nanking Government, stated that of all the U.S. Army Aviation posts he and his party visited within the last two weeks, Maxwell Field and the Tactical School offered greater opportunities for studying modern American methods of air defense. In fact, Colonel Mow was so interested in his inspection of the post recently and so anxious to prolong it that he declined to set a date for the party's departure from Montgomery, saying that he would leave when he had seen enough of Maxwell Field.

Colonel Mow is head of an official party from China on a tour of leading aviation activities throughout the United States and Europe. Other members of the Mission are Lieut.-Col. F.S.Liu, Major Y.T. Yeng, Messrs. C.F. Warg and E.S.K. Yen. The officers are all connected with the Chinese Army Air Corps, while Mr. Wang is an engineer and Mr. Yen is Secretary, both in the government service. The party has been in America, or "The States," as Colonel Mow said, about five weeks, coming here from Europe.

The Chinese officials arrived in Montgomery from Langley Field, Va., and their survey included Wright, Selfridge and Mitchel Fields. Barksdale and Randolph Fields are next on their visiting list.

V-6732, A.C.

AIR CORPS INSTRUMENT LANDING SYSTEM

By Marguerite Jacobs Heron

The year 1934 proved to be one of progress and activity for those interested in what is undoubtedly one of the Air Corps' outstanding developments - the Air Corps Instrument Landing System.

During this year its application to airplanes other than basic training types was proved practical, and thousands of successful landings were made with high speed, multi-motor Bombardment and Transport types with the sole aid of the system's installations.

Classes of Army pilots continued to be qualified in its use at Wright Field, the pilots finding it as simple in operation with faster landing speeds and larger airplanes and as uncomplicated as with training types. Installations were made at Langley Field and at the Newark Airport during the Army Air Mail activities, and plans for installation at other Air Corps fields were completed.

Later, the engineers installed equipment in a Bureau of Air Commerce airplane and placed at their disposal every means of making a thorough investigation of the system, as well as all the tests they desired. In October, 1934, the final decision of the Bureau of Air Commerce was made for the adoption of the Air Corps system as standard for commercial operation. The following is quoted from a letter from Mr. Eugene L. Vidal, Director of Air Commerce:

> "Allow me again to express my appreciation for the splendid cooperation of the Army Air Corps and my sincere admiration of the engineering organization and technical skill which produced this wonderful development."

Since this time, five of the major airlines have sent pilots to Wright Field for instruction in the Air Corps system, and these men will in turn act as instructors to other pilots of their companies. Personnel of the Department of Commerce who will take charge of installations at commercial airdromes, inspection, and training of pilots have likewise been at Wright Field for instruction.

As noted in a previous issue of the News Letter, Captain Albert F. Hegenberger was awarded the Distinguished Flying Cross Oak Leaf Cluster in May, 1934, for his very valuable contribution to aviation in this development. It was an honor that likewise brought pleasure and reward to his associates in the development of the project. For it is a loyal and fearless group of officers and civilian engineers who have aided Captain Hegenberger in this signal success.

It is an interesting fact to note that in the thousands of ~~test~~ landings made under the hood in the testing and developing of instrument landing equipment not a single fatality has occurred or even an accident of any moment to personnel or equipment. This in itself, we believe, is high tribute - but we touch wood, as one always should amid the uncertainties of living - as we say it.

Ed. Note: It may be of interest in connection with the above article, written by the Materiel Division Correspondent, who was a constant contributor to the News Letter in bygone days, and to whom we are glad to extend a hearty welcome, to quote from an article on the Army Air Corps Radio Blind Landing System, which appeared in a recent issue of the Air Commerce Bulletin, issued by the Bureau of Air Commerce, Department of Commerce.

It is stated in this article that, following a conclusive demonstration of the Army Air Corps blind-landing system at Langley Field, Va., participated in by Eugene L. Vidal and other Air Commerce officials, this system was adopted as standard by the Bureau of Air Commerce.

This demonstration "marked the conclusion of 11 months' work by the Bureau of Air Commerce in which various systems and modifications for blind landing were investigated and tested as applied to a Ford tri-motor transport type airplane, under the direction of Chester A. Snow, Jr. Tentative plans were immediately made for the establishment of this facility along a transcontinental air route together with its installation at one or more central points where commercial air line pilots may become familiar with its use. Invitations have been issued to several representative air lines to send selected groups, including operations and technical personnel and expert instrument pilots, to Patterson Field at Dayton, Ohio, to participate in individual demonstrations of the system.

A brief description of the demonstration on September 13 will help to explain the operation of the system in blind landing as well as the most valuable additional function served by its main element, the Kreusi loop radio compass as a navigational aid.

The party took off in the Department Ford from the Washington Airport, and a few minutes later tuned the radio compass receiver on the Richmond, Va., radio range station which is normally used for beam and weather broadcast. As the plane was swung into a heading directly toward the Richmond station, the needle of a small, round dial instrument in the pilot's cockpit assumed a vertical or zero center position. Subsequent devia-

tions of heading were immediately indicated to right or left, as the case might be, by corresponding deflections of the needle. By merely steering the airplane so as to keep this needle in its center position, test pilot E. A. Cutrell flew at all times with the certainty of an exact heading toward the Richmond range antenna. While on this flight use was made of the radio range transmitting station. The operation of the loop compass must in no way be confused with the normal use of the range beam. The radio compass is a homing device. It will operate on any type of transmitter or commercial broadcasting station within its frequency and power range. It makes no use of fixed radio beams, but continually indicates heading rather than position with reference to a fixed predetermined path and indicates with equal certainty from all points toward the transmitting station on which it is tuned. In short, the radio loop compass tells the pilot directly not where he is but where he wants to go.

About 10 minutes after take off from Richmond, the radio compass was tuned on one of the special landing transmitters at Langley Field. This transmitter is merely a low power broadcasting station equipped with a gas engine driven generator for power supply and a collapsible mast antenna. The whole outfit is compactly mounted in a small automobile truck of the light delivery type. Guided by radio loop compass tuned on this mobile transmitting station, the Ford airplane was brought directly over a predetermined point some 1,200 feet from the edge of Langley Field in position for an into-the-wind landing.

In all six hooded instrument landings were made, the party of observers being divided into two groups which by flying separately enabled each to witness the operation of the system both from the air and from the ground.

The party was most fortunate in being joined for the demonstration by Captain Albert Hegenberger, Air Corps, who flew in from Wright Field, Dayton. Captain Hegenberger, working under a special directive of the Secretary of War and acting in the capacity of project engineer with a small staff of civilian scientists, actually developed the system at Wright Field about 2 years ago. He personally acted as test pilot during the development's experimental stage, climaxing his work with a short solo flight completely hooded from start to finish, performed on the spur of the moment without special preparation of any kind. * * * *

In the Army Air Corps blind landing system use is made of two small automobile truck transmitting stations of the type above described. In addition, each truck is equipped with a small secondary transmitter which, operating in conjunction with a second instrument located near the radio compass indicator on the airplane instrument board, causes a light to flash as the airplane passes over each ground station. Thus the pilot having arrived at a predetermined point by means of the radio loop compass, is informed of his arrival by the visual marker's light flash just described.

In actual operation the two trucks are driven to selected points on the road network surrounding the landing area, and assume positions along a line projected across the field in an into-the-wind direction. Whereas the relative distances of these positions from the field border may be varied to suit conditions of terrain, wind, etc., a convenient combination for most conditions with the Ford trimotor is 1,500 feet and 2 miles from the field border for the inner and outer stations, respectively. The pilot flying in by instrument from some distant point may, when within 30 or 40 miles, tune in on the inner station and fly directly to it by means of his radio loop compass.

His momentary arrival over the inner station is indicated by the light flash of the visual marker instrument. He immediately tunes on the different frequency of the outer station and flies to it by the same means. One or more inter-station trips serve to accurately establish the desired into-the-wind course, which is then clocked on the directional gyro. In preparation for the final approach, the pilot lets down to approximately 300 feet as indicated by his sensitive altimeter, and heads toward the field, passing over the outer station at this altitude. Immediately on passing this station, the engines are throttled and the airplane by instrument is held in a power glide of such angle as to enable it to pass over the inner station at an indicated altitude of about 150 feet. Once the final marker light flash has been received, the pilot is through with radio loop compass and marker, and through with altimeter. Reverting to his directional gyro for course, he relies on his flight instruments to maintain the glide angle before mentioned.

In the Ford trimotor we have found engine speed of 1,150 revolutions per minute and air speed of 75 miles per hour producing a rate of descent of 400 feet per minute to be about the optimum desideratum. These figures, however, are by no means critical and may be varied within limits with almost equally good results. Contact is made usually lightly in a "wheel type" landing with tail slightly below line of flight position. The pilot, on feeling the contact, closes the throttles and as the tail drops of its own accord, is able to apply brakes

by reference to the directional gyro or to shorten the landing run.

It will be noted from the foregoing description that application of the system depends merely on the routine succession of logical steps which become progressively simpler in requisite technique as the more critical point of actual contact with the ground is approached.

Another noteworthy point in connection with the system is that the continual use of its main element, the radio loop compass, in routine navigation will automatically keep the pilot trained in large measure for actual instrument landings.

During the last 8 months in which the Bureau of Air Commerce has been investigating the applicability of the Army Air Corps system to commercial transport aviation, over 150 unassisted hooded landings have been made with the Ford trimotor at 5 different fields and in wind conditions ranging from calm to 12 miles per hour tail wind as well as in varying degrees of cross wind. It is believed that improvements on more modern airplanes, such as flaps, long-travel shock-absorbing units, pedal brakes and low speed controllability inherent in modern design, will materially simplify the blind landing operation.

As to ease and speed of pilot instruction in the Air Corps system, which also may provide a rough index of the periodic practice requisite to thereafter keep the pilot in training, the following is interesting: E.A. Cutrell, highly trained and expert instrument test pilot of the Bureau of Air Commerce, accomplished his first unassisted hooded landing after 1 hour and 15 minutes of flight training on an Army-type airplane relatively unfamiliar to him. Another pilot, not an expert in instrument flying and not in training, required just double this time. The Air Corps last winter operated a school in blind landing for their officers, in which graduation requirements were five unassisted completed consecutive blind flights. Flying time for completion of this course averaged about 10 hours, and at the time most of these students had received little if any instrument flying instruction.

The advantages of the standardization of a system usable alike by commercial and military aviation are too numerous and obvious to mention. Suffice it to say that both commercial air transport and Army Air Corps will be rendered tremendously more effective by this step.

It would be improper to conclude without detailing to some extent the wholehearted, public-spirited, and unselfish cooperation given to Air Commerce by the Army Air Corps in carrying out of this project. On two occasions in particular, first during the air mail emergency and secondly during their preparation for the Alaska flight, the Air Corps was called upon for equipment and the time of trained technical personnel which it could ill afford to spare. Even when most hard pressed, no job was considered too great, no request was refused. The splendid type of interdepartmental cooperation thus initiated augurs well for future air accomplishment."

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NEW WIND INDICATOR DESIGNED AT MATERIEL DIVISION

A new wind direction indicator which permits easier interpretation from low altitudes and from the ground than any type heretofore in use has been designed at the Materiel Division, Wright Field, Dayton, Ohio, and placed in service test at Randolph Field, Texas.

This indicator consists of a tetrahedron (four-sided figure), each side triangular in shape, which measures 36 feet from apex to stern, and 15 feet across the base of each side triangle. The unit is installed on a concrete base on the field and is so balanced and pivoted that the apex heads into the wind. A horizontal mast extending out from the apex increases the length and gives clearer definition, especially for night indication, since both the mast and the tetrahedron are outlined by means of 10-watt lights having special green hoods. For daylight visibility the left side is painted in international orange with black blocks at the edges and the right side is white with black blocks.

The structure is of steel, covered with fabric. It is mounted on a concrete base and weighs, complete, 2100 pounds. The base is equipped with accessories for giving remote wind indication, especially useful in an operations office, for locking the indicator in any desired position, and for rotating indicator to desired position previous to locking. The last two features are used primarily for training purposes or for narrow fields where it is feasible to control directional landing.

This type indicator replaces the B-4A type and is practically ready for standardization.

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At Hamilton Field experiments are being conducted in the evenings now to test the new floodlights just installed on the ends of the flying field. In addition to the floodlights, Hamilton Field has a 100,000 candle power beacon light on its water tank.

COLD TEMPERATURE STARTING OF AIR CORPS ENGINES

By H. L. Carpenter

Considerable trouble has been experienced in starting airplane engines of 500 h.p. and over at sub-zero temperatures. Various methods can be employed, such as warming the oil by application of heat from without the engine, draining the tank at time of shut-off and refilling with hot oil at time of starting, or using a separate oil tank filled with very light oil and circulating this oil through the engine before shut-off. The first two methods, however, require special equipment and personnel which would amount to approximately 2500 pounds for a flight of 18 airplanes.

Since no data regarding the torque required, number of turns necessary, or rate at which the engine should be turned were available for a suitable heavy duty starter, an investigation was made at Wright Field, using a cold chamber and an Air Corps type GIV-1570-F engine. Tests extended through temperatures ranging from +15° F. to -20° F., and resulted in the following determinations:

a. Engine can be started on first revolution when cranked at a minimum speed of 70 r.p.m. down to +5° F. at lower temperatures, one to five revolutions at the same average rate are necessary.

b. Engine oil of sufficiently low viscosity only permits this accomplishment. Oil coolers should be used if necessary to prevent oil from overheating after engine has been started.

c. Engine must be primed at engine intake manifold directly over intake valves, the priming fluid being broken up by priming jets into as fine a spray as possible.

d. Carburetor must be designed to permit volume of fuel entering engine to be adjusted to full rich for starting, and "leaned" down to prevent "overloading" as engine warms up.

e. Ignition must be so installed to permit retarding, preventing back-firing, at low cranking speeds and must give positive spark at proper time. Battery ignition found preferable to magneto ignition for starting.

f. In order to maintain sufficient reserve energy in starter to turn engine one or more revolutions, the engine torque must be approximately 300 ft. pounds lower than that of starter clutch setting. To prevent failure of engine and starter parts, starter clutch shall never be set over a maximum of 900 ft. pounds breakaway torque.

In order to hold the torque required for engine turnover at a low value for low temperature starting, it was found necessary to replace heavy oils with those of lighter S.A.E. ratings. Otherwise the torque increased at temperatures below +15° F. to such an extent that practically all energy in the starter was lost in the starter clutch. With the equipment used, it was not possible to measure the torque while engine was being brought up to speed, but this is being changed so that on future tests torque measurements will be taken by recording instruments on the dynamometer.

Present engines will fire while being turned over with present starters, but explosions are so weak that the engine cannot be kept running. This project is one which, since engines of larger horsepower are being developed, demands continued concentration on the part of the Materiel Division and cooperating manufacturers.

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HIGH GUNNERY SCORES FOR 15TH OBS. SQDN.

The pilots of the 15th Observation Squadron took the lead on the Airship Group pilots in average flying time, due to their participation in the gunnery practice at Chapman Field, Miami, Fla., where weather is "comme ca." In approximately five weeks all of the officers and combat crews of the squadron completed their firing, this period including the time required to transport personnel and equipment from and to Scott Field, Ill. Organization and station activities at its home field were maintained at the same time.

The Squadron is justly proud of its performance on the gunnery range. The scores turned in showed that of the pilots, 92.3% were experts; observers, 100% experts, and the 16 enlisted men selected for combat crews, 100% experts.

Of the 13 pilots firing the Fixed Gun course, 1st Lieut. R.O. Brownfield was high scorer with 873, followed by 1st Lieut. W.L. Ritchie with 853. High scorers among the 13 Observers firing the Flexible Gun Course were 1st Lieut. R.O. Brownfield with 1187 and 2nd Lieut. Gitzinger, Air Reserve, with 994. Private, 1st Class, S.L. Gross and Staff Sgt. M.G. Hall were high guns among the enlisted men firing the Flexible Gun course, the former's score being 996 and the latter's, 962.

The 15th Observation Squadron returned to Scott Field on February 17th, wearing broad grins, exhibiting much sun tan and being thoroughly satisfied with Chapman Field as a Gunnery Base. The proximity of Miami and Miami Beach was largely responsible for the satisfied

smirks is the biased opinion of the News Letter Correspondent from Scott Field.

HAMILTON FIELD AIRMEN TAKE OFF FOR PANAMA
By the News Letter Correspondent

Fifteen pilots and 14 enlisted men took off from Hamilton Field, San Rafael, Calif., on the first leg of their training flight to Panama on Feb. 15th in four air transports. They flew to Rockwell Field to learn in ten days the new equipment, which includes controllable pitch propellers and the latest of radio sets. The flight will then proceed to Washington, D.C., via San Antonio, Texas, where one plane will remain as a replacement, under 2nd Lieut. Roy H. Lynn. Two Staff Sergeants to service this plane will also remain as replacements until the Panama Flight has been cleared at Miami, Fla.

Upon leaving San Antonio, the 10 Martin Bombers will be flown to the Nation's Capital to await orders for the official start of the main flight to the Canal Zone, involving a distance of over 2,100 miles.

Under the command of Captain Harold D. Smith, 31st Bombardment Squadron Commander, this routine training flight will give the personnel experience in long distance flying and navigation. It will also test speed, range, fuel and oil consumption of the B-12A Martin Bombers. With wide open throttles, these ten fast new Bombers will roar toward the equator at a cruising speed of approximately 200 miles per hour. One stop will be made at Miami, Fla., for the purpose of refueling, and then will follow a 1,100-mile flight over water to the Panama Canal.

A non-stop flight with Washington as the goal on the return will be the supreme achievement, should 817 gallons of gas suffice for the 2,150 miles. After reaching Washington, the flight will return to Hamilton Field, from which the personnel and airplanes had come. All of the participating personnel are from Hamilton Field with the exception of two Crissy Field officers, Lieuts. Richard C. Lindsay and William Ball, who are graduate navigators and will guide the airplanes over the 1100 miles of the Gulf of Mexico.

A list of the personnel participating in this flight was published in the previous issue of the News Letter.

The contrast flight to the one to Panama is the Cold Weather Test Expedition, in which the airmen, garbed like Eskimos, fight the rigors of snow and ice in temperatures that freeze the skis of their planes in a few minutes. King Winter has mantled the terrain with 42 inches of snow and has frozen the ice to 18 inches at Duluth, where 17 planes of every type that the American Army possesses, rest on the bay ice with skis frozen to the ground. To release the plane, two men dig a trench from the middle of the ski back to the wheel. Then they saw the ski loose from the compact snow with a rope.

Such are the daily struggles which confront Capt. Arthur H. Hamilton, 1st Lt. Paul Kemmer and 2nd Lt. Birrell Walsh, as they combat the Klondike weather of the Northwest in their flight toward Great Falls, Montana. Six enlisted men who share the work and hardships of this expedition are Staff Sergeant Thomas B. Vinson, Sergeants Roy H. Coulter, George W. Hollowell, Ludwig Kurrley, Corporal Harvid Saeger and Private Jack Mathews.

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F L Y I N G B L I N D
By Albert D. Cannon

Crouched low in the cockpit of the little single-seater sat Cadet Josephus Jones. Beads of clammy perspiration hung heavily upon his youthful face. Into his eyes had come a light that seemed to cry out that the lad's mental state bordered upon desperation. The world beyond the confines of his cockpit was totally obscured; not even the glimpse of a single friendly star whereby he might get his bearings. His first real need for proper interpretation of his "Blind Flying Instruments;" he had been so overshelmingly confident of his mastery of them. Yet here he was, completely lost. Hours it seemed had passed since he had lost the "beam," and trying frantically to recall the exact wording of his text books. He was swinging in wide arcs attempting to again pick it up and to find his course. More than a reasonable amount of time for him to have reached his objective had elapsed, yet he was still flying on, God only knew where.

Suddenly the ship slid off on its right wing and settled into a tight spin. To the novice at the controls it seemed as if the whole world had settled right in the pit of his stomach. He could stand it no longer, so over the side he went.

Pushing back the cockpit cover, he stepped down to the hangar floor. Timidly he approached the instructor, saying: "Please, Lieutenant, couldn't we start this problem over again; I've never been in a Link Trainer before."

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Second Lieuts. Louis H. Gitzinger, Donald E. Philip and John W. Christner, Air Reserve, recently reported at Scott Field, Ill., for six months' active duty. V-6732, A.C.

KELLY FIELD GRADUATES ANOTHER CLASS OF AVIATORS

February 20th was Graduation Day at the Advanced Flying School, Kelly Field, San Antonio, Texas, when 62 students who successfully completed the one-year flying course at the Air Corps Training Center, received their "Wings" and the rating of "Airplane Pilot." Among these students are six officers of the Regular Army, who were detailed to the Air Corps for flying instruction; two officers of South American countries, and 54 Flying Cadets.

Specializing in the various branches of combat aviation were 22 students in Bombardment, 14 in Pursuit, 15 in Observation and 9 in Attack.

The six student officers were assigned by War Department Orders, just issued, as follows:

Second Lieuts. Harry S. Bishop, Coast Artillery (B); David N. Crickette, Field Artillery (B) and John M. Price, Infantry (A) to the Hawaiian Department.

Second Lieuts. Robert D. Landry, Infantry (P) and Samuel A. Mundell, Infantry (O) to the Panama Canal Zone.

Second Lieut. Charles A. Clark, Jr., Field Artillery (B) to the Philippines.

The 54 Flying Cadets are being assigned to various Air Corps tactical units for active duty under their Cadet status for the period of one year.

The two foreign officers who graduated, Captain Nelson L. Wanderley, Brazilian Army, and 2nd Lieut. Nicholas S. Davila, Colombian Army, will return to their native countries.

Flying Cadets who graduated as Attack Pilots are enumerated below, as follows:

James C. McGehee	Birmingham, Ala.
John F. Guilmartin	Midway, Ala.
David B. Kuhn	Texarkana, Ark.
Loris W. Moomaw	Santa Ana, Calif.
Boyd Hubbard, Jr.	Adair, Iowa
Arthur Y. Snell	Brockton, Mass.
Tom Bolton	Dallas, Texas
Podge M. Reed	Moody, Texas

Bombardment Pilots

Raymond V. Schwanbeck	Ash Ford, Arizona
Frank B. Scott	Little Rock, Ark.
Gerald L. Cherymisin	Alta Loma, Calif.
Joseph A. Thomas	Hollywood, Calif.
George F. Breck, Jr.	Los Angeles, Calif.
Lee B. Coats	Los Angeles, Calif.
Willis S. Marvin	Riverside, Calif.
Lawrence W. Greenbank	Washington, D.C.
David C. Barrow, Jr.	De Soto City, Fla.
Carlos J. Cochrane	Topeka, Kansas
Clarence T. Edwinson	Topeka, Kansas
John B. Montgomery	Charlotte, N.C.
Arthur H. Rogers	Raleigh, N.C.
Anthony G. Eubanks	Corpus Christi, Texas
John H. Jeffus	Plainview, Texas
Marshall A. Elkins	Waco, Texas
Joseph H. Wilson	Payson, Utah
Stetson M. Brown	St. Johnsbury, Vt.
Walter J. Garrison, Jr.	Crozet, Virginia

Observation Pilots

Arthur V. Jones, Jr.	Los Angeles, Calif.
Lloyd A. Walker, Jr.	Los Angeles, Calif.
John L. Dufrane	Oakland, Calif.
Jesse A. Smith	Woodrow, Colo.
Tracy R. Walsh	Pensacola, Fla.
William L. Fernald	Tarpon Springs, Fla.
George S. Brewer	Arcadia, La.
Robert B. McClellan	Baton Rouge, La.
Francis H. MacDuff	Brockton, Mass.
William Q. Rankin	Gulfport, Miss.
Frank V. Haynes	Clyde, N.C.
Norman L. Peterson	San Antonio, Texas
Thomas M. Bartley, Jr.	Waco, Texas
John B. Cornett	Waco, Texas

Pursuit Pilots

Lucian N. Powell	Carbon Hill
John S. Chennault	Montgomery, Ala.
Willis M. Darnell	Little Rock, Ark.
George S. Buchanan	Palo Alto, Calif.
Ansell S. Williams, Jr.	Palo Alto, Calif.
Frederick W. West, Jr.	San Francisco, Calif.
William W. Jarrell, Jr.	Thomasville, Ga.
Frank E. Rouse	Boston, Mass.
Thomas E. Moore	Collettsville, N.C.
Frank L. Higgs	Columbus, Ohio
Baskin R. Lawrence, Jr.	Seneca, S.C.
Lawrence R. Olmstead, Jr.	Brownsville, Texas
Frank J. Bennett	Gretna, Va.

Note: Specialist Pilot Ratings of officer graduates - (A) Attack; (B) Bombardment; (O) Observation; (P) Pursuit.

Among the "Pursuiters" of the Flying Cadet graduates the name of John S. Chennault is noted. Here is a case of an Air Corps Pilot providing a new pilot for his branch of the service, for the father of this young man is none other than Captain Claire L. Chennault, of Maxwell Field, Alabama, leader of the well known Air Corps acrobatic trio who have amazed spectators at Air Races with their perfectly timed air maneuvers and whom the newspapers have termed "The Men on the Flying Trapeze."

It seems that, since young Chennault graduated as a "Pursuit" pilot, he is no mean hand at acrobatic flying and perhaps some day he may even surpass the startling aerial performances of his dad.

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OFFICIAL DEDICATION OF HAMILTON FIELD

The official dedication of Hamilton Field, San Rafael, Calif., has been set for May 5, 1935, when it is expected - so says the News Letter Correspondent - that 20,000 people will gather at the air base to see the massed flight of planes and to hear the dedication exercises. All the civic organizations in the Redwood Empire have announced their intention to make this social function the greatest that the Bay districts have witnessed.

The American Legion is also expected to contribute its share toward making this event a grand success.

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Word was received at Maxwell Field that Lt.-Col. H.H. Arnold, C.O., of March Field, with 40 P-26's. piloted by 25 officers and 15 cadets, would pay a call before the end of Feb. Maxwell Field plans to entertain the visitors in true southern style.

CHANGES IN COMPOSITION OF MARCH CLASS AT RANDOLPH FIELD, TEXAS

The issue of the News Letter of February 1st gave the names of Flying Cadet appointees selected by the Chief of the Air Corps to comprise the class to begin flying training at the Air Corps Primary Flying School at Randolph Field, Texas, on March 1, 1935.

Since this list was published, the composition of this new class has undergone many changes, for various reasons. There has always existed a long waiting list of young men eager to take advantage of the flying training afforded at the Air Corps Training Center.

The selection of applicants for Flying Cadet appointment is governed by a policy which gives preference -

a. To graduates of the U.S. Military and Naval Academies failing to receive commissions due to lack of vacancies;

b and c, respectively, to enlisted men of the Air Corps and of other branches of the Regular Army who, at the time of appointment, have served at least 11 months;

d. To officers and enlisted men of National Guard Air Corps units;

e and f, respectively, to college graduates of Air Corps ROTC units and of ROTC units of other branches of the service;

g. To graduates of recognized colleges and universities;

h. To officers and enlisted men of the National Guard with at least 11 months' service;

i. To students in Air Corps ROTC units who have completed their Junior year;

j. To Reserve officers and members of the Enlisted Reserve Corps with at least 11 months' service.

k. To students in good standing of recognized universities who have completed their sophomore year.

l. To others.

In selecting the students for the March 1st Class at Randolph Field, it was possible for the first time in quite a number of years to include those applicants coming under the category of "k" as listed above. Some of the applicants who were offered a Flying Cadet appointment were eliminated when they failed to pass the physical examination. Others who had been on the waiting list for quite some time declined appointment for the reason that they had secured desirable employment in the meantime. A number of applicants had entered the holy state of matrimony, and the regulations say that "Candidates for appointment as Flying Cadets must be unmarried male citizens of the United States," so this provision of the regulations automatically eliminated them.

In this particular connection an incident was injected into the proceedings which some may consider amusing and others, tragic. The editor was told in good faith that one of the candidates who had joined the ranks of the Benedicts offered to divorce his better half in order to secure the appointment he had been so eagerly waiting for.

The names of the candidates added to the March, 1935, Class, are listed below, as follows:

Thomas, Wm. McKinley	Rockville Center,L.I,N.Y.
Beaty, John C.	Azusa, Calif.
Beeman, Marshall E.	Los Angeles, Calif.
Brown, Nelson T.	Tulare, Calif.
Cobb, Marvin W.	Santa Barbara, Calif.
Ames, Kenneth G.	Bridgton, Maine
Armstrong, Robert D.	Cincinnati, Ohio
Avera, James K.	Austin, Texas
Ballou, George A.	Bowena, Ky.
Atkinson, Robert S.	Reno, Nevada
Boyd Clay Allen	Santa Fe, New Mexico
Boone, Dan E.	Okmulgee, Oklahoma
Clutter, Bartley A.	What Cheer, Iowa
Clark, Murray F.	Clovis, New Mexico
Cautoros, Frank A.	Columbus, Ohio
Corrigan, Walter W.	The Dalles, Oregon
Davis, Francis Lyle	Grand Rapids, Mich.
Donicht, Harry Louis	Glencoe, Minnesota
Bale, Charles E.	Vancouver, Washington
Edgington, Leo F.	Salina, Kansas
Engene, Leonard	Bergen, North Dakota
Edwards, Albert E.Jr.	Deming, Washington
Finn, Ryder W. Pvt.	Hamilton Field, Calif.
Forrester, Bruce	Kansas City, Mo.
Gadton, Paul	Myra, Texas
Geisness, Robert A.	Port Angeles, Wash.
Gibson, Kenneth H. Pvt.	March Field, Calif.
Hardy, Claude	Emporia, Kansas
Heil, Boyce F.	San Antonio, Texas
Harris, Kenneth A.	Seattle, Wash.
Hamlin, Ancil	Whitley City, Ky.
Hogg, George Wm.	Fernald, Iowa
Johnson, Wm. F.	Fulton, South Dakota
Johnston, John M.	Kansas City, Mo.
Lessig, Cecil P.	Salina, Kansas.
LaPierre, Bruce H.	Cincinnati, Ohio.
Luetcke, Milmer	San Antonio, Texas
Morris, Robert A.	Elkins, West Virginia
McKay, Leroy S.	El Reno, Okla
Patman, James H.	Hughes Spring, Texas
Scott, Robert P.	Long Island City, N.Y.
Sheffield, Wallace B.	San Antonio, Texas
Sailors, Robert E.	Champaign, Ill.
Sherman, Willard E.	Mt. Vernon, S.D.
Mathews, Marvin D.	Bay City, Mich.
Taylor, Philip L.	Williamstown, Mass.
Thompson, Zane, Jr.	Cambridge, Mass.
Wackwitz, Ernest F.	Rockville Center,L.I.N.Y.
Wade, David A.	Minden, Louisiana
Walker, David B.	Sacramento, Calif.

The following names of candidates were removed from the list of those making up the March, 1935, Class:

Adamson, George B.	Reno, Nevada
Ashworth, Walter V.	Hamilton, Mo.
Barton, Willie	Jefferson City, Mo.
Bates, Harvey C.	Marietta, S.C.
Blalock, Thomas L.	Jacksonville, Fla.
Brooks, Lawrence K.	Clayton, N.Y.
Brown, Marion Judd	Nevada, Texas
Browne, W. Robert	Dallas, Texas
Burns, Henry F.	Utopia, Texas
Burns, Virgil	Wakarusa, Indiana
Combs, Alton	Middletown, Ohio
Eads, Harold E.	Greeley, Colo.
Farmer, Bob L.	Plainview, Texas

Fisher, Walter S.	Beebe, Arkansas
Fortmann, Bernhard G.	Pearl River, N.Y.
Freeman, H. Hoyt	Hartford, Conn.
Freund, John L.	Washington, D.C.
Friar, William P.	Florence, S.C.
Harwood, Bruce L.	Claremont, Calif.
Hatfield, Fred A.	Highland Park, Mich.
Hobbie, Richard M., Jr.	Montgomery, Ala.
Hulvey, Charles N., Jr.	University, Va.
Johnson, Robert E.	Omaha, Nebraska
Kamb, Roy A.	Mt. Vernon, Wash.
Keene, Milton C.	Pinckneyville, Ill.
Kyle, Charles V.	Cedarville, Ohio
Lange, Ronald W.	Duluth, Minn.
Lathrop, Alfred B.	Pasadena, Calif.
Lee, Burton Donald	Nixon, Texas
Mann, Robert Anderson	New Market, Ala.
Koett, J. Williams	Pittsburgh, Pa.
Maddox, Clifford D.	San Diego, Calif.
Martin, Francis J.	Ottumwa, Iowa
Martin, Richard F.	Multnomah, Oregon
McAllister, Remus G.	Glendale, Calif.
McCauley, George E.	Los Angeles, Calif.
McMillan, Edward B.	Bay City, Mich.
Munford, R. Sims	Waynesboro, Penna.
Nail, Max	Memphis, Texas
Norris, John I.	St. Joseph, Mo.
Norton, Fred C.	McMinnville, Oregon
Oldham, Jack Fay	Kansas City, Mo.
O'Reilly, Patrick C.	Eufaula, Okla.
Parsley, Jarvis D.	London, Ky.
Peelle, Elbert	Whittier, Calif.
Petersen, Francis M.	Ogden, Utah
Purdy, Edward E.	Meetsetse, Wyoming
Shelton, Thomas J., Jr.	Plainview, Texas
Silversmith, Nathan	Brooklyn, N.Y.
Somers, Paul H.	Jefferson City, Mo.
Spratt, Keith	Ames, Iowa
Stevenson, Marvin	Lisco, Nebraska
Stormont, James C.	Pittsburgh, Pa.
Stuck, Sanford W.	Kansas City, Mo.
Talkington, Perry C.	Crystal Springs, Miss.
Tomlinson, Joseph H.	El Paso, Texas
Trew, James L.	San Diego, Calif.
Wallace, Dwane L.	Wichita, Kansas
Wuerpel, Morris	Attleboro, Mass.
Yaggy, Edward E.	Hutchinson, Kansas

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UNITED STATES GOVERNMENT INSURANCE

The following information relating to Government Insurance has been furnished to the News Letter through the courtesy of the Veterans Administration, Washington, D.C., and is published as being of vital interest to Air Corps personnel:

"Officers and enlisted men now entering the active service under the War or Navy Department, or Coast Guard, are entitled to apply for insurance in multiples of $500, not less than $1000 or more than $10,000, within 120 days from date of enlistment or entrance into the active service and before retirement, discharge or resignation.

There are seven different plans of insurance provided by the Government - Ordinary Life, 20 and 30 Payment Life, 20 and 30 Year Endowment, Endowment at age 62 and Five Year Level Premium Term Insurance. Government Insurance provides for the payment of benefits in the event of total permanent disability and death and the premium charged is the net rate according to the American Experience Table of Mortality with interest at three and one-half per centum per annum.

Total Disability Insurance, providing for the payment of benefits in the event the insured is totally disabled as the result of disease or injury for a period of four consecutive months or more, may be included with any of the plans of insurance provided, upon application, proof of good health satisfactory to the Administrator, and the payment of the necessary premium. This additional insurance may also be included in policies now in force, and is independent of any disability clauses contained in such policies.

Veterans of the World War who served in the Military and Naval Forces of the United States at any time from October 6, 1917, to July 2, 1921, who have heretofore applied or been eligible to apply for Yearly Renewable Term (War Time) Insurance, or United States Government Life (Converted) Insurance may now be granted insurance in multiples of $500, not less than $1000 or more than $10,000, upon application, proof of good health satisfactory to the Administrator and payment of the required premium. The maximum amount of insurance available is $10,000, including any amount now in force or previously surrendered for cash."

If application is made for Government Insurance within 120 days after the applicant enters the service, no medical examination is required. Veterans of the World War applying for Government Insurance must undergo a complete medical examination. This applies also to all applicants for the Total Disability Insurance.

United States Government Life Insurance is free from restrictions as to residence, travel, occupation, military or naval service.

The low rates on Government Insurance are shown by the following extracts from the Premium Tables.

ORDINARY LIFE Monthly Premium per $1,000 Insurance		Level Premiums for total Disability Provision when attached to a Life or Endowment Insurance Policy for $1,000 bearing the same effective date. ORDINARY LIFE - FIVE YEAR LEVEL PREMIUM TERM (Premiums payable to age 65)	
Age	Monthly Payment	Age	Monthly Payment
17	$1.08	17	$0.12
18	1.10	18	.13
19	1.12	19	.13
20	1.15	20	.14
21	1.17	21	..14

Age	Monthly Payment	Age	Monthly Payment
22	$1.20	22	$0.15
23	1.23	23	.15
24	1.26	24	.16
25	1.29	25	.17
26	1.32	26	.18
27	1.35	27	.18
28	1.39	28	.19
29	1.43	29	.20
30	1.47	30	.21
31	1.51	31	.22
32	1.55	32	.23
33	1.60	33	.24
34	1.65	34	.25
35	1.70	35	.26
36	1.76	36	.27
37	1.81	37	.29
38	1.88	38	.30
39	1.94	39	.31
40	2.01	40	.33
41	2.09	41	.35
42	2.16	42	.36
43	2.25	43	.38
444	2.34	44	.40
45	2.43	45	.43
46	2.53	46	.45
47	2.64	47	.47
48	2.76	48	.50
49	2.88	49	.53
50	3.01	50	.57
51	3.15	51	.60
52	3.30	52	.64
53	3.46	53	.68
54	3.63	54	.73
55	3.82	55	.78
56	4.01	56	.83
57	4.22	57	.89
58	4.44	58	.95
59	4.68	59	1.03
60	4.94	60	1.11
		61	1.19
		62	1.29
		63	1.40
		64	$1.51

Additional information on Government Insurance, as well as application blanks, are available to those interested by writing to the Veterans Administration, Washington,D.C., or to the Chief, Information Division,O.C.A.C.

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COMMISSION IN AIR RESERVE FOR FLYING CADETS

A total of 53 Flying Cadets, who graduated from the Air Corps Advanced Flying School, Kelly Field, Texas, on February 28, 1934, and who for the past year served with Air Corps tactical units at various stations, completed their second year flying course on February 20th, and have been recommended by the Chief of the Air Corps for appointment as second lieutenants in the Air Reserve. Request has been made of the War Department to order these prospective Reserve officers to extended active duty with Air Corps tactical units, to begin on or about March 1, 1935. They are stationed at the present time, as follows:

Barksdale Field, Shreveport, La.

Eades, William	Lexington, Ky.
Hay, James Black	Waterloo, Iowa
Hinton, J.W.	Port Arthur, Texas
Keese, William Brewer	Wyoming, N.J.
Livingstone, Richmond A.	Pawtucket, R.I.
McMahon, George Robert	Huntington, W. Va.
Rodieck, Ralph Wm.	Palestine, Texas
Stone, Frank Copeland	Wichita, Kansas

Brooks Field, Texas

Altman, Dale Ellis	Gresham, Oregon
Clark, William Hogan	Golconda, Ill.
Holladay, Wendell Greer	Indianola, Iowa
Kester, Edson Eugene	Jacksonville, Fla.
Lerche, Andrew O.	Albany, N. Y.
Martin, Leslie Etheridge	Midlothian, Texas
Motley, Clifford	Norman, Oklahoma
Palmer, Albert Luther	Terrell, Texas
Pannis, William Walter	Philadelphia, Pa.
Pierce, Arthur Jenkins	Montague, Mass.
Pierce, George Everhill	Montague, Mass.
Stewart, John Philip	Riverside, Calif.

Hamilton Field, Calif.

Bryant, Alexander W.	
Bullock, Cady Richmond	Glendale, Calif.
Burton, Alexander Tennile	Beverly Hills,Calif.
Capp, William Charles	Venice, Calif.
Ecklund, Sven Harold	Morrill, Neb.
Kugel, Richard Charles	Rhinelander, Wis.
Luedecke, Alvin R.	El Dorado, Texas
McDermont, Verne Alexander	Riverside, Calif.
Moser, Glen Clune	Los Angeles, Calif.
Mundell, Lewis Leo	Fountain, Colo.
Olmsted, Fay Walter	Denver, Colo.
Peterson, Clair Arthur	Fargo, North Dakota
Proper. Louis William	Modesto, Calif.
Root, Edgar Walthall	Huntsville, Ala.
Sanford, George Samuel	Mobile, Ala.
Timper, Norman F.D.	Watertown, Mass.
Virgin, Edward Warren	Montgomery, Ala.

March Field, Calif.

Ashman, Robert	Appleton, Wis.
Carter, James Thomas,Jr.	Spartanburg, S.C.
Clement, Browne	Thorndale, Texas
Cook, Frank Richardson	Denver, Colo.
Eisenhart, Donald W.	Culbertson, Nebraska
Gray, Fred Colbert, Jr.	Abilene, Texas
Hatcher, Wm. Albert, Jr.	Detroit, Mich.
Hilger, John Allen	Houston, Texas
James, Weldon Marion	Fort Worth, Texas.
Perland, Hugh Holton	Berkeley, Calif.
Rendle, Irvine Alfred	Rawlins, Wyoming
Shafer, George Harold	Culbertson, Nebraska
Spicer, Henry Russell	Los Angeles, Calif.
Todd, Paul Engberg	Engberg, Texas
Turner, John Harold	Corning, Iowa
Wilson, Paul Boyer	Carlisle, Pa.

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For the past five or six months, the 55th Pursuit Squadron, Barksdale, Field, La., has been flying P-26A's, and everyone is pleased with the airplane. In service tests on dive bombing and ground gunnery (standard straight approach) the very stable flight of the plane greatly facilitated sighting and some noteworthy scores were made.

V-6732, A.C.

PANAMA FLIGHT TRAINING AT ROCKWELL FIELD

Early on February 26th, the Panama Flight left March Field, Calif., en route to Washington, D.C., the official starting point of the long flight to the Canal Zone. The itinerary called for intermediate stops at Kelly, Maxwell and Langley Fields. A 40-hour check of equipment is scheduled to be made at Langley Field.

Prior to the take-off from March Field, the participating personnel were temporarily stationed at Rockwell Field to make preparations for the flight. On February 14th, three transports landed at Rockwell Field and unloaded officers, enlisted men and baggage, making the start of a ten-day period of training there before the flight across the continent to Washington.

The first few days were spent in getting acquainted with the B-12 Martin Bombers with their controllable pitch propellers, radio compasses, etc., as well as intensive training in instrument flying under the supervision of the Advanced Air Navigation Training Unit.

On February 20th, the 12 Bombers, fully loaded with 817 gallons of gasoline, 64 quarts of oil, a crew of two men and sand bags to take the place of baggage, left Rockwell Field at 10:45 p.m., on an over water flight of 1200 miles. Proceeding out over the Pacific Ocean, the flight set a course for Hamilton Field, San Rafael, Calif., and after circling that field, returned to Rockwell Field over the same route, landing at 4:30 p.m.

The flight personnel were quite pleased with the functioning of their equipment and, after inspection on the ground, with the fine condition of same following the long flight. Members of the flight now feel that the 1150-mile flight over the water from Miami, Fla., to France Field, Panama, may be easily taken in their stride.

The flight reached Langley Field at 1:45 p.m., February 28th.

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WAR DEPT. ORDERS AFFECTING A.C. OFFICERS

CHANGES OF STATION: To Langley Field, Va.: Major Adlai H. Gilkeson from duty with Organized Reserves, 8th C.A., Fort Sam Houston, Texas; Captains Eugene L. Eubank, Arthur K. Ladd and Malcolm N. Stewart, from Air Corps Tactical School, Maxwell Field; Captain Lawrence P. Hickey and 1st Lieut. Charles H. Howard, from Office of the Chief of the Air Corps, Washington, D.C.; Captain Clements McMullen from Maxwell Field; Captain John F. Whiteley from Wright Field; Captain Ennis C. Whitehead from Barksdale Field; 2nd Lt. Hugh F. McCaffery from Aberdeen Proving Ground, Md.

To Chanute Field, Ill.: 2nd Lieut. Daniel F. Callahan, Jr., from Panama; 2nd Lieuts. Wiley D. Ganey and Stuart P. Wright, previous orders in their cases revoked; 2nd Lieut. Earle T. MacArthur, Jr.

To March Field, Calif.: 2nd Lieut. Eugene H. Beebe, from Hamilton Field; Lieut.-Col. John H. Pirie, from Headquarters, 5th Corps Area, Fort Hayes, Ohio.

To Aberdeen Proving Ground, Md.: 1st Lt. Lloyd H. Tull, from Langley Field.

To Barksdale Field, La.: 1st Lieut. Wm. P. Sloan, from foreign service.

To Randolph Field, Texas: 1st Lieuts. Robert L. Easton and John F. Egan, from Hawaii; 1st Lieut. Bernard A. Bridget, from Panama.

To Pope Field, N.C.: 1st Lieut. Stuart G. McLennan, from Panama.

To San Antonio Air Depot, Duncan Field: 1st Lieut. Max H. Warren, from Panama.

To Mitchel Field, N.Y.: 2nd Lieut. Chas. B. Dougher, from Hawaii.

To Presidio of San Franisco, Calif.: Col. Roy C. Kirtland, from Hqrs. 2nd Corps Area, New York City.

To Rome, Italy: 1st Lieut. Thomas D. White, from Moscow, Soviet Russia, for duty as Assistant Military Attache and Assistant Military Attache for Air.

DETAILED TO THE AIR CORPS: 2nd Lieuts. Paul Birlingame, Jr., Infantry, and Horace L. Sanders, Field Artillery, and to Randolph Field, Texas, March 1, 1935, for flying training.

PROMOTION: 1st Lieut. Ronald A. Hicks to Captain, with rank from Feb. 1, 1935.

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MANY APPLICATIONS FOR ENGINEERING SCHOOL

The Office of the Chief of the Air Corps has informally informed the Commandant of the Air Corps Engineering School of the names of 150 Air Corps officers who have stated on their preference cards a desire to attend the Engineering School. "It is thought exceedingly probable," says the News Letter Correspondent, "that many of these officers are not acquainted with AR 350-550, which provides that officers will be selected for detail for the course by the War Department upon recommendation of the Chief of the Air Corps, and that application to attend the School may be submitted at any time through military channels to The Adjutant General.

This submission of an application to attend the School is essential in that an application blank indicating the student's military and educational qualifications is required. At the present time officers of the Air Corps are being selected for attendance who have from three to seven years' commissioned service and who have the necessary engineering requirements. In addition to expressing a desire on a preference card for the School, it is essential that the formal application be made."

MEETING OF INSTITUTE OF AERONAUTICAL SCIENCES

Wright Field was well represented at the Annual Meeting of the Institute of Aeronautical Sciences which was held in New York City on January 29th and 30th. Capt. E.J. Powers, Lieut. F.D. Klein and Mr. Opie Chenowith, of the Power Plant Branch, Captain F.M. Hopkins of the Air Corps Engineering School, and Mr. H.L. Carpenter, of the Electrical Unit attended. Lieut. Klein and Mr. Carpenter presented papers on two outstanding Materiel Division developments, the former paper entitled "Aircraft Engine Performance with 100 Octane Fuel." and the latter, "Cold Temperature Starting of Air Corps Engines."

A brief resume of these papers is given below.

AIRCRAFT ENGINE PERFORMANCE WITH 100 OCTANE FUEL
by Lieut. Frank D. Klein

Prior to 1928, Air Corps engines operated with about 50 Octane Number Fuel. At present, fuel having an anti-knock value of 92 Octane by the Air Corps method of test is used in engines designed for maximum performance on such fuel, with a resulting increase in power output per unit weight of about 33-1/3 per cent.

Developments of the fuel industry made possible early in 1934 the production of commercial iso-octane on a large scale at a cost sufficiently low to make the outlook for Air Corps use of higher anti-knock fuels decidedly promising. Previously, prohibitive cost, limited availability and necessarily high lead content, resulting in excessive corrosion difficulties, had been limiting factors. The Air Corps, anticipating a need for 100 Octane fuel, prepared an experimental specification for such fuel on February 1, 1934. One thousand gallons of commercial iso-octane were procured in May, 1934, to be blended with a sufficient quantity of a good quality of aviation gasoline, to make 2,000 gallons of 100 Octane fuel, an amount sufficient for experimental multi-cylinder engine tests to determine the increase in power output possible with such fuel.

After serious consideration of physical properties and anti-knock value of fuels available, four were selected as the most interesting for comparison with Air Corps fuel of 92 Octane rating. Each of these had an anti-knock value of 100 Octane and conformed closely to specification requirements except in tetraethyl lead content. A Wasp at 2200 r.p.m. and Cyclone engine at 1950 r.p.m. were used for the tests.

On the Wasp engine, constant throttle mixture control runs and constant specific fuel consumption variable throttle runs were made. On these variable throttle runs, the throttle was opened progressively until the maximum allowable cylinder temperature of 550° F. was reached. In the mixture control runs, three of the four 100 Octane fuels appeared superior to the 92 Octane fuel, some irregularity in engine operation causing uncertainty concerning the test of the fourth 100 Octane fuel. In the variable throttle, specific fuel consumption run at approximately .55 pound per brake horsepower per hour, two of the 100 Octane fuels appeared slightly superior to the other two and showed 620 h.p. as compared with 510 h.p. for the 92 Octane fuel, a 21.6 per cent increase.

On the Cyclone engine, constant specific fuel consumption, variable throttle runs were made with each of the five fuels at approximately .60 pound per brake h.p. per hour. The throttle was opened progressively in each case until the engine suddenly became very rough and cut out. This occurred before excessive cylinder temperatures were reached. Under these conditions the 100 Octane fuels showed a power output of aproximately 800 h.p. as compared to 610 h.p. with the 92 Octane fuel, a 31 per cent increase.

With engines designed with high compression ratio and high degree of supercharge specifically for operation on 100 Octane fuel, still greater gain in performance should be obtained.

In several instances in testing Pursuit planes at Wright Field, 100 Octane fuel made possible full throttle operation over the speed course, and completion of rate of climb checking without overheating of cylinders, where with 92 Octane fuel the test could not be completed. Also, in the Mitchel Trophy Race held at Selfridge Field in 1934, 100 Octane fuel was successfully used to increase power output and raise the speed of the race. This permitted the airplanes to operate with a reasonable margin of safety at considerably higher speed, and no detonation was evident to the pilots.

In this race, which is limited to standard service type Pursuit planes, the winner averaged a speed of 236.8 miles per hour.

The marked increase of 15-30 per cent in power output with 100 Octane fuel over that obtainable with 92 Octane Number anti-knock value clearly demonstrates the extreme desirability from a military standpoint of adopting this fuel as a means of greatly increasing engine performance with relatively little increase in weight, provided that engines are designed to take full advantage of them.